

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A parallel confocal laser microscopy system comprising:

- an array of vertical-cavity lasers (VCSEL) for emitting light beams, and
- an optical means comprising at least one lens for focusing the light beams onto an object to be observed,

wherein a photodetector is arranged on one face of each VCSEL laser such that the photodetector is capable of receiving a light beam originating from said object via a cavity of the VCSEL laser, the cavity having an opening used as a filtering hole to achieve confocal imaging.

2. (Previously Presented) The system according to claim 1, wherein the photodetector is arranged on a face opposite to the cavity opening of the VCSEL laser.

3. (Previously Presented) The system according to claim 1, further comprising a scanning means for carrying out laser scanning so as to produce an image.

4. (Previously Presented) The system according to claim 3, further comprising a controlling means for controlling the scanning means so as to carry out an acquisition of images in real time.

5. (Previously Presented) The system according to claim 3, wherein the scanning means comprise MEMS microsystems.

6. (Previously Presented) The system according to claim 3, wherein the scanning means comprise piezoelectric positioners.
7. (Previously Presented) The system according to claim 3, wherein the scanning means are capable of moving the VCSEL laser array.
8. (Previously Presented) The system according to claim 3, wherein the scanning means are capable of moving the optical means.
9. (Previously Presented) The system according to claim 1, wherein the optical means are capable of directing each light beam originating from the object to be observed towards the cavity of a VCSEL laser.
10. (Previously Presented) The system according to claim 1, further comprising a modulation means for modulating the light beams emitted from the array.
11. (Previously Presented) The system according to claim 10 wherein the light beams originating from the object to be observed are modulated, the system further comprising a synchronous detection means for extracting a useful signal from an electrical signal generated by each photodetector.
12. (Previously Presented) The system according to claim 1, wherein the optical means comprise at least one mobile lens for allowing image acquisition at different depths of the object to be observed.

13. (Previously Presented) The system according to claim 1, wherein the optical means comprise at least one variable curvature lens for allowing image acquisition at different depths of the object to be observed.
14. (Previously Presented) The system according to claim 1, further comprising a means for axially moving the array so as to carry out image acquisition at different depths of the object to be observed.
15. (Previously Presented) The system according to claim 1, wherein the system consists of a miniature head in the form of a housing.
16. (Currently Amended) The system according to claim 15 wherein the miniature head is arranged at the end of an endoscope.
17. (Currently Amended) A method of parallel confocal laser microscopy comprising:
emitting a plurality of light beams from an array of VCSEL vertical cavity lasers;
focusing, using an optical means comprising at least one lens, the light beams on an object to be observed; and
receiving, by a photodetector arranged on a face of each VCSEL laser, a light beam originating from the object via a cavity of the VCSEL laser, wherein an opening of the cavity is used as a filtering hole for the light beam originating from the object to achieve confocal imaging.
18. (Previously Presented) The method according to claim 17, wherein laser scanning is carried out so as to produce an image.

19. (Previously Presented) The method according to claim 17, wherein laser scanning is carried out so as to acquire images in real time.
20. (Previously Presented) The method according to claim 18, wherein the laser scanning is carried out by moving an optical means used to focus the light beams.
21. (Previously Presented) The method according to claim 18, wherein the laser scanning is carried out by moving the array.
22. (Previously Presented) The method according to claim 18, wherein MEMS-type micro-systems are used for carrying out the laser scanning.
23. (Previously Presented) The method according to claim 18, wherein piezoelectric positioners are used for carrying out the laser scanning.
24. (Previously Presented) The method according to claim 17, wherein the light beams emitted from the array are modulated and synchronous detection is carried out at the level of the photodetector.